

REMARKS

In response to the above Office Action and the objection to the drawings and the expression "jetting air" in claim 10, claim 10 has been cancelled.

With respect to the objection in section 3, the description of the drawings has been moved as requested.

With respect to the objection to the specification, the word "access" has been changed to "approach" where noted.

With respect to section 4 and the rejection of claims 1-11 under 35 U.S.C. §112, second paragraph, claim 1 has been amended to include the feature that the pair of the upper and the lower flask and the match plate rotate and move "together with the upper and lower squeeze means and cylinders." Regarding claims 6 and 7, these claims have been amended to clarify that the filling process can be a two stage process. See page 19, first two paragraphs of the specification.

It is believed the claims now comply with the requirements of §112, second paragraph and its withdrawal as a ground of rejection of the claims is requested.

In addition, claims 1-9 and 11 have been amended to clarify the invention and to place the claims in more conventional U.S. format. Support for the amendment to claim 1 can be found as noted above and on page 11, lines 4-35; page 13, lines 1-20; and page 20, lines 3-33 of the specification.

In the Office Action, the Examiner rejected claims 1-4 under 35 U.S.C. §103(a) for being obvious over WO 00/50187, hereafter WO'187. Claims 5-11 were rejected for being obvious over WO'187 further in view of U.S. Patent No. 6,470,953 to Hirata et al., hereafter Hirata.

First, the invention of claim 1 relates to a method for molding an upper and a lower mold having no flask by using two pairs of an upper and lower flask, which are horizontal and have intakes for foundry sand, and of which each pair can alternately and intermittently rotate.

WO'187 does not disclose or suggest such a feature.

Secondly, in the machine for producing flaskless molds of WO'187, the piston rod 21 and the fifth actuator 22 to move the second squeeze plate 6 are fastened to the right-side compression frame 18. The compression frame 18 is fixed to the base frame 1. (See page 6, lines 3-5, and page 7, lines 1-6, of WO'187.) Thus, the piston rod 21 and the fifth actuator 22 are fixed to the base frame 1.

In contrast, in the present invention as set forth in claim 1, the upper and the lower squeeze means and cylinders to move them can rotate together with the pair of the upper and the lower flask and the match plate between the perpendicular position and the horizontal position.

Thus, the present invention can simultaneously carry out the defining process (2) and the rotating and moving process (3), or the squeezing process (5) and the rotating process (6) as set forth in claims 2 and 3.

Thus, compared to the invention of WO'187, the method of claim 1 has a significant effect, in that it can reduce the time to produce a flaskless mold and can improve productivity.

Claims 5-9 and 11 are dependent from claim 1, so it is submitted they are not obvious over the cited combination of references for the same reason. In any event, while Hirata may disclose upper and lower segmented-squeeze feet as a squeeze

means, it does not disclose the method for molding an upper and a lower mold having no flask by using two pairs of the upper and lower flask, which are horizontal and having intakes for foundry sand, and of which each pair can alternately and intermittently rotate.

The Examiner also rejected apparatus claims 12-17 for being obvious over WO'187 further in view of U.S. Patent No. 3,589,432 to Miller et al., hereafter Miller and claim 18 further in view of U.S. Patent No. 4,541,476 to Larsen.

Claims 12-18 have been cancelled and replaced by new claims 19-24. Claim 19 is a combination of claims 12 and 15, claims 20-23 correspond to claims 13, 14, 16 and 17 respectively and claim 24 to claim 18.

More specifically, new apparatus claim 19 includes the "removing mechanism" of former claim 15 which is not disclosed in WO'187. It is noted that while the Examiner specifically commented in the rejection of claims 12-17 about certain claims, nothing was mentioned about claim 15.

Accordingly, it is submitted that neither new main apparatus claim 19 nor claims 20-23 dependent therefrom are obvious over the cited combination of references.

With respect to claim 24, since this depends from claim 19, it is believed it is not obvious over the cited references for the same reason. Moreover, WO'187 does not disclose an apparatus having two pairs of a cope (an upper) and a drag (a lower) flask or a method for changing a match plate.

Miller discloses two pairs of an upper and a lower flask and a rotating mechanism to rotate them. However, to change the match plate, it does not disclose the feature of

a moving process to move the upper flask positioned at the squeezing mechanism and the first carriage having the existing match plate to the removing mechanism, and to simultaneously move the upper flask positioned at the removing mechanism and the second carriage having the new match plate to the squeezing mechanism by means of the rotating mechanism as claimed in claim 24.

Larsen discloses a match-plate (a pattern board) exchanging mechanism. it discloses that the used pattern board and a new pattern board are exchanged by using carriages 11 and 12 and the pressing plate 3a.

In contrast, in the invention of claim 24 these are the features a) to e). This method for exchanging the match-plate is significantly different from Larsen.

Accordingly, it is believed new claim 24 is also not obvious over the cited combination of references.

Finally, with respect to the obviousness-type double patenting rejection over Application No. 10/591,166, attached is a Terminal Disclaimer disclaiming the terminal portion of any patent granted on this application that would extend beyond the terminal portion of any patent granted on that application.

It is believed claims 1-9, 11 and 19-24 are now in condition for allowance.


In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Attachments: **New Abstract
Terminal Disclaimer**

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